

Demonstration 1 - Dimensional Instruments

ME3023 - Measurements in Mechanical Systems

Mechanical Engineering

Tennessee Technological University

Topic 1 - Using Calipers

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- Overview
- Components
- Vernier Calipers
- Digital Calipers

Overview

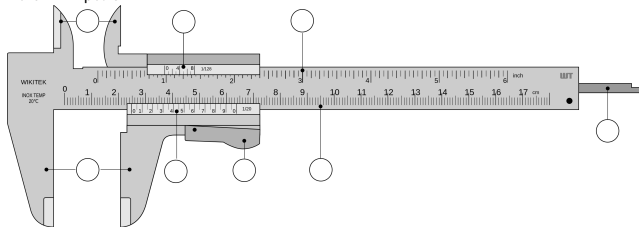
- A caliper (... a pair of calipers) is a device used to measure the distance between two opposite sides of an object. Text:

Wikipedia

- Length, Width, Height
 - Inside and Outside Diameter
 - Depth
- There is a wide variety of caliper(s). This word means different things in different fields.
 - Engineering and Design
 - Machining and Construction
 - Medical Applications and Others

Components

Text: Wikipedia



- ① - **Outside jaws**: used to take external measures of objects
- ② - **Inside jaws**: used to take internal measures of objects
- ③ - **Depth probe**: used to measure the depth of objects
- ④ - **Main scale (cm)**
- ⑤ - **Main scale (inch)**
- ⑥ - **Vernier (cm)**
- ⑦ - **Vernier (inch)**
- ⑧ - **Retainer**: used to block movable part

Vernier Calipers

A vernier scale is a visual aid to take an accurate measurement reading between two graduation markings on a linear scale by using mechanical interpolation; thereby increasing resolution and reducing measurement uncertainty by using Vernier acuity to reduce human estimation error.

Pros

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Cons

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Digital Calipers

A digital caliper contains an embedded processor and user interface to facilitate the measurement process.

Pros

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Cons

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